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RE: Comment on Class 3 Permit Modification Request for Incorporation of the Organic Recovery Unit 2 Tanks into the Chemical Waste Management of the Northwest Hazardous Waste Permit ORD 089 452 353

Dear Mr. Anderson:

The Oregon Department of Environmental Quality (DEQ) is considering a permit modification to allow for the expansion of the volume of hazardous wastes at Chemical Waste Management's (CWM) ORU-2 facility near Arlington, Oregon. In neighboring jurisdictions such as Washington, this type a modification would trigger a full compliance review.¹ And, the first question in Washington would be "does the facility emit toxic air pollutants?"² If so, Washington would apply maximum available control technology or its equivalent to regulate the hazardous air emissions.³

Oregon is proposing to take a different, unaccountable, and unacceptable approach that would exempt CWM's facility because of an inappropriate interpretation of EPA's regulations. Oregon does not assert that ORU-2 will not emit toxic materials; it cannot legitimately do so, since it has

¹ See <http://nwcleanairwa.gov/regulation/section-300/>. A "new source" means one or more of the following:

a) The construction or modification of a stationary source that increases the amount of any air contaminant emitted by such stationary source or that results in the emission of any air contaminant not previously emitted, b) The restart of a stationary source after permanent shutdown c) Any other project that constitutes a new stationary source under the Federal Clean Air Act.

² See <http://nwcleanairwa.gov/regulation/section-200/>. A toxic air pollutant (TAP) or toxic air contaminant in Washington is – Any toxic air pollutant listed in WAC 173-460-150. The term toxic air pollutant may include particulate matter and volatile organic compounds if an individual substance or a group of substances within either of these classes is listed in WAC 173-460-150. The term toxic air pollutant does not include particulate matter and volatile organic compounds as generic classes of compounds.

³ See <http://nwcleanairwa.gov/regulation/section-200/>. Washington defines best available control technology (BACT) as follows – An emission limitation based on the maximum degree of reduction for each air pollutant subject to regulation under chapter 70.94 RCW emitted from or which results from any new or modified stationary source, which the NWCAA, on a case-by-case basis, taking into account energy, environmental, and economic impacts, and other costs, determines is achievable for such stationary source or modification through application of production processes and available methods, systems, and techniques, including fuel cleaning, clean fuels, or treatment or innovative fuel combustion techniques for control of each such pollutant. In no event shall application of the Best Available Control Technology result in emissions of any pollutants which will exceed the emissions allowed by any applicable standard under 40 CFR Parts 60, 61, and 63. Emissions from any stationary source utilizing clean fuels, or any other means, to comply with this paragraph shall not be allowed to increase above levels that would have been required under the definition of BACT in the Federal Clean Air Act as it existed prior to enactment of the Clean Air Act Amendments of 1990.

not monitored the emissions from the CWM facility and no one, except perhaps CWM, knows the full extent of its relevant emissions.

Rather than imposing best available control technology, Oregon has asserted that all aspects of ORU-2 are being permitted as a recycling unit under 40 CFR 261.6(d) for management of oil refinery wastes identified in 40 CFR 261.6(a)(3)(iv)(C) and asserts that CWM is exempt from regulations normally applied to hazardous waste treatment units. Oregon's approach would absolve CWM from monitoring and controlling the emissions of toxic chemicals from CWM's Thermal Oxidizing Unit, which combusts the waste stream from the recycling unit itself. Oregon's approach is inconsistent with the regulatory requirements in Washington and other jurisdictions, which focus on controlling any toxic air emissions by best available technology standards.

Oregon's reading of 40 CFR 261.6(c)(1) and 261.6(d) is too broad. This regulation only exempts the "recycling process itself" from certain regulatory requirements. It does not exempt thermal oxidation of hazardous waste residues left over from the recycling process, which must be regulated pursuant to 40 CFR Parts 264, 270, and 63 Subpart EEE. With respect to such activity, EPA has stated:

[W]e wish to clarify that materials being burned in incinerators or other thermal treatment devices, other than boilers and industrial furnaces, are considered to be "abandoned by being burned or incinerated" under § 261.2(a)(1)(ii), whether or not energy or material recovery also occurs In our view, any such burning (other than in boilers and industrial furnaces) is waste destruction subject to regulation either under Subpart O of Part 264 or Subpart O and P of Part 265. If energy or material recovery occurs, it is ancillary to the purpose of the unit—to destroy wastes by means of thermal treatment—and so does not alter the regulatory status of the device or the activity. 48 Fed. Reg. 14472, 14484, Proposed Rules, April 4, 1983

United States v. Rineco Chemical Industries, Case No. 4:07-cv-01189-SWW summary judgment (E.D. Ark. filed March 4, 2009). A proper reading of 40 CFR 261.6(c)(1) and 261.6(d) would bring Oregon into alignment with its sister states.

Background:

ORU-2 is composed of a number of unit operations that are intended to separate oily materials from inert solids. ORU-2 is permitted to recover organic materials from solids and sludge derived from petroleum refining operations. Table 1 provides a list of the waste codes currently allowed to be processed in ORU-2.

Table 1: EPA RCRA Waste Codes for Materials Approved for Processing in ORU-2

Waste Code	Description
D001	Ignitable
D018	Benzene
F037	Petroleum refinery primary oil/water/solids separation sludge—Any sludge generated from the gravitational separation of oil/water/solids during the storage or treatment of process wastewaters and oily cooling

	wastewaters from petroleum refineries.
F038	Petroleum refinery secondary (emulsified) oil/water/solids separation sludge—Any sludge and/or float generated from the physical and/or chemical separation of oil/water/solids in process wastewaters and oily cooling wastewaters from petroleum refineries.
K048	Dissolved air flotation (DAF) float from the petroleum refining industry.
K049	Slop oil emulsion solids from the petroleum refining industry
K050	Heat exchanger bundle cleaning sludge from the petroleum refining industry
K051	API separator sludge from the petroleum refining industry
K052	Tank bottoms (leaded) from the petroleum refining industry
K143	Process residues from the recovery of light oil, including, but not limited to, those generated in stills, decanters, and wash oil recovery units from the recovery of coke by-products produced from coal
K169	Crude oil storage tank sediment from petroleum refining operations
K170	Clarified slurry oil tank sediment and/or in-line filter/separation solids from petroleum refining operations
K171	Spent Hydrotreating catalyst from petroleum refining operations, including guard beds used to desulfurize feeds to other catalytic reactors
K172	Spent Hydrorefining catalyst from petroleum refining operations, including guard beds used to desulfurize feeds to other catalytic reactors

The American Petroleum Institute notes that petroleum sludge compositions contain both organic components and heavy metals. According to recent research, high concentrations of zinc, iron, copper, chromium, nickel, and lead were reported in petroleum sludge from refineries.⁴ Information submitted to the record in this proceeding indicates that arsenic, mercury, selenium, and vanadium are also likely to be found in the waste streams noted above.⁵

ORU-2 accomplishes oil recovery using heat in a thermal desorption unit (TDU). The TDU volatilizes materials with boiling points greater than 900°F (482°C). The interior of the TDU is purged with steam to create an oxygen-free environment that inhibits combustion. The off-gas from the unit is cooled to nominally 90°F (32°C) using a wet scrubber. Scrubber liquid is processed in an oil-water separator and the oil fraction is stored as the final product from the process. The water fraction from the separator is recycled back to the wet scrubber.

The cooled gas waste stream from the wet scrubber is treated in a Thermal Oxidation Unit (TOU) to convert residual organics to carbon dioxide and water. The TOU would not eliminate mercury, arsenic, cadmium, hydrochloric acid, or other toxic and hazardous materials from release to the atmosphere in the emissions from the TOU.

⁴ *Petroleum sludge treatment and disposal: A review*. Available from: https://www.researchgate.net/publication/328005403_Petroleum_sludge_treatment_and_disposal_A_review [accessed Oct 17, 2018].

⁵ Affidavit of Gregg S. Meyers dated October 2, 2018.

RCRA⁶ Permitting Authority Over ORU-2:

As discussed below, substantial volumes of toxic chemical can be expected to be emitted from the TOU. Oregon's exemption represents inconsistent regulation of air emissions since an identical unit that was not so designated would be subject to 40 CFR 264 Subpart X (Miscellaneous Units). Subpart X includes, but is not limited to, the necessity to comply with 40 CFR 63 Subpart EEE (National Emission Standards for Hazardous Air Pollutants, or NESHAPS). The product from ORU-2 should have to comply with new source NESHAP standards. These standards mandate that new sources do not discharge gasses into the atmosphere that contain:

1. Dioxins and furans in excess of 0.20 ng TEQ/dscm corrected to 7 percent oxygen;
2. Mercury in excess of 45 µg/dscm corrected to 7 percent oxygen;
3. Lead and cadmium in excess of 120 µg/dscm, combined emissions, corrected to 7 percent oxygen;
4. Arsenic, beryllium, and chromium in excess of 97 µg/dscm, combined emissions, corrected to 7 percent oxygen;
5. For carbon monoxide and hydrocarbons:
 - a. Carbon monoxide in excess of 100 parts per million by volume, over an hourly rolling average (monitored continuously with a continuous emissions monitoring system), dry basis and corrected to 7 percent oxygen. If you elect to comply with this carbon monoxide standard rather than the hydrocarbon standard under paragraph (b)(5)(ii) of this section, you must also document that, during the destruction and removal efficiency (DRE) test runs or their equivalent as provided by § 63.1206(b)(7), hydrocarbons do not exceed 10 parts per million by volume during those runs, over an hourly rolling average (monitored continuously with a continuous emissions monitoring system), dry basis, corrected to 7 percent oxygen, and reported as propane or
 - b. Hydrocarbons in excess of 10 parts per million by volume, over an hourly rolling average (monitored continuously with a continuous emissions monitoring system), dry basis, corrected to 7 percent oxygen, and reported as propane;
6. Hydrochloric acid and chlorine gas in excess of 21 parts per million by volume, combined emissions, expressed as hydrochloric acid equivalents, dry basis and corrected to 7 percent oxygen; and
7. Particulate matter in excess of 34 mg/dscm corrected to 7 percent oxygen.

Chemical Waste Management should also be required under 40 CFR 63 Subpart EEE to conduct a comprehensive performance test to demonstrate compliance with the emissions standards and to establish limits on operating parameters (such as feed rates and TDU operating temperature) to ensure continued compliance.

The ORU-2 facility is currently not protective of the environment and CWM should bring it into compliance with the NESHAP requirements, including:

1. Conducting a comprehensive performance test to demonstrate to the local community that ORU-2 emission limits are at or below those mandated in 40 CFR 63.1203(b).

⁶ RCRA denotes the Resource Conservation and Recovery Act.

2. Establishing feed rate limits and process operating limits to ensure emissions remain within the limits demonstrated in the performance test.

Mercury Emissions from ORU-2

The TDU has a normal operating temperature is 900°F (482°C) and an upper operating temperature of 1200°F (649°C). Several forms of Hg will volatilize to a substantial level at the normal operating temperature of the TDU (Table 2). This fact implies that some or all of the Hg present in the feed to the TDU will exit in the vapor phase. The presence of Hg in the TDU off-gas is not discussed in the permitting documents and the off-gas treatment train is not optimized for Hg removal. Quenching of the TDU exhaust gas to 90°F (32°C) in the wet scrubber will remove some of the Hg from the vapor stream, but the amount of removal is not discussed in the permit, has not been tested, and so remains an unknown.

Table 2: Boiling Point of Selected Mercury Compounds.

Element or Compound	Boiling Point
Hg ₍₀₎	356.5°C
HgCl	Sublimes at 400°C
HgCl ₂	302°C
Hg ₂ O	Decomposes at 100°C to Hg ₍₀₎
HgO	Decomposes at 500°C to Hg ₍₀₎

It was indicated by CWM staff that ORU-2 has historically operated approximately 25% of the year at a feed rate of nominally 2 tons/hr. The target feed rate of the facility was stated to be 6 tons/hr. Assuming an average Hg feed concentration of 12.6 mg/kg, the total quantity of Hg fed to ORU-2 each year would range from 108 lb/year (at 2 ton/hr) to 323 lb/yr (at 6 ton/hr). Conservation of mass dictates that the mercury will either be a component of the solid from the TDU, the process water, or the TOU. This annual quantity of Hg will either be incorporated into the solid waste landfill or deposited on the local landscape after being released in the vapor phase. The fraction of Hg destined for each fate will depend on many operating parameters such as the Hg feed concentration, the temperature and flowrate in the TDU, the flow rate of the scrubber liquid in the wet scrubber, and the residence time of the gas in the scrubber. All of these processing variables would typically be evaluated in a 40 CFR 63 Subpart EEE performance test (40 CFR 63.1207) and limits would be set to ensure that removal efficiencies are maintained. CWM has not conducted a performance test and so it is not possible to accurately estimate the fate of Hg fed to ORU-2.

Conclusion:


Thank you for the opportunity to comment. We make the following observations about this proposed permit.

1. ORU-2 is composed of a number of unit operations that are intended to separate oily materials from inert solids by heating the solids to nominally 900°F (482°C). This temperature is high enough to volatilize many forms of Hg.

2. Data from both CWM and a competitor (TD*X Associates) indicate that Hg may be present in some materials processed in the thermal desorption unit of ORU-2 and, thus, will likely be a component of the system off-gas.
3. Mercury removal efficiency within the ORU-2 system is unknown and because of the lack of data available from CWM or DEQ, it is not possible for DEQ to make an accurate and publicly accountable estimate of the Hg concentration in the off-gas released to the environment. It is also not possible to make a publicly accountable and accurate estimate of the total amount of Hg that will be released annually to the environment.
4. Compliance with 40 CFR 63 Subpart EEE would include conducting a comprehensive performance test to demonstrate to the local community that ORU-2 emission limits are at or below those mandated in 40 CFR 63.1203(b). Compliance would also include establishing feed rate limits and process operating limits to ensure emissions remain within the limits demonstrated in the performance test.

We urge Oregon DEQ to require that the CWM facility meet best or maximum available control technology standards. These largely equivalent standards should eliminate mercury and other hazardous waste discharges from the facility.

Sincerely,



Jaime A. Pinkham
Executive Director